Mercury Contamination—Functional or Economic Obsolescence?

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Abstract

This paper examines a single-family residential property that was contaminated by mercury, remediated, and then sold. Value loss can be calculated, but is the value loss functional or economic obsolescence?

Background

"New tenants moving into a rural Oskaloosa house Sept. 18 accidentally spilled six to eight pounds of elemental mercury left in a container. Inhaling or ingesting mercury over time can cause irreversible damage to the brain, kidneys or developing fetuses, according to the Kansas Department of Health and Environment. The Oskaloosa house—south of town on U.S. Highway 59—has since been placed under guard by the Environmental Protection Agency" (*Oskaloosa Independent* 1997). Thus another appraisal problem has been created.

Sale and Valuation Method

How do you value a home contaminated by mercury? Research and reading of various appraisal texts and journals did not provide clear guidance. One principle was prevalent throughout: Do not make any adjustment that is not supported by the market.

The subject property is a conventional style home built in 1983 that was purchased in February 2000 for $65,000. At the time of purchase, the Environmental Protection Agency (EPA) had remediated the property and approved the house for occupation. Remediation is "the act or process of eliminating environmental contamination on, in, or under property, to restore the property to an uncontaminated state" (IAAO 1992). Mercury is a physical contaminant and is listed as a heavy metal, along with others such as lead.

Considering the location, market activity in the area, and previous use of the property, the highest and best use would still be as a single-family residence. An attempt should be made to use all three approaches to value—sales comparison, income, and cost. Use of the sales comparison approach was not reliable. None of the comparable properties had mercury or any other environmental problems. Comparable sales indicated that, under normal conditions, the property would have a value of $98,000. Comparable sales were used to establish the amount of physical deterioration for the subject.

Without consideration of the mercury contamination, the indicated value using the cost approach was $102,290. Land value is based upon comparable land sales for the past two years in the subject's neighborhood. However, there are insufficient data available to calculate a supportable value by the income approach.

Cost Approach

The first step in the process is to extract the residual house value from the sale price.

Sale price		$ 65,000
Land value	–	35,940
Detached garage value	–	3,960
Residual house value		$ 25,100

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The subject property has 16.66 acres of land valued at $35,940, or $2,157 per acre. Because the valuation date was January 1, 2000, sales of vacant land for 1998 and 1999 were used. Figure 1 shows sales supporting the subject's value.

Figure 1
Sales of Vacant Land, 1998–99

Sale number	Sale date	Price	Acreage	Price per acre
Sale 1	March 1998	$31,787	19.53	$1,628
Sale 2	April 1998	46,000	17.21	2,673
Sale 3	November 1998	32,500	21.06	1,543
Sale 4	January 1999	38,000	18.28	2,079

Based on the land sales in figure 1, a per-acre value was developed for use in the computer-assisted land pricing schedule that was applied to the subject.

Using the residual house value, the total amount of depreciation can be calculated. The replacement cost new (RCN) is recalculated annually to reflect local construction.

RCN		$ 75,760
House residual	–	25,100
Total depreciation		$ 50,660

Depreciation can be in the form of physical deterioration, functional obsolescence, or economic obsolescence. Because the home is only seventeen years old, a reasonable estimate of physical deterioration can be determined. Physical deterioration is the loss of value due to normal wear and tear. Physical deterioration is extracted from sales annually and was established to be 16 percent for the subject.

Because the property was vacant for more than two years, a considerable amount of maintenance had been deferred. Information provided by the purchaser allowed for a cost to cure to be calculated by use of Marshall and Swift (1999). The total amount of cost-to-cure items was $15,140. This cost to cure also reflects the RCN for the replaced components and is used to calculate the amount of deterioration for the long-lived items.

Functional or Economic Obsolescence

After the physical deterioration is accounted for, the additional loss in value must either be functional or economic obsolescence.

Total depreciation as calculated		$ 50,660
Cost-to-cure components	–	15,140
Physical long-lived items 16% × ($75,760 – $15,140)	–	9,700
Additional value loss		$ 25,820

$25,820 ÷ $75,760 (RCN) = 0.34 = 34% additional value loss.

This substantial loss in value may be attributable to stigma. Stigma is "a perception that a property continues to be contaminated even though it has been cleaned up" (IAAO 1997). Stigma is intangible but may have an effect on the subject's value. "This creates a situation similar to obsolescence, because, if the market will pay less for a once contaminated, but now restored, property, the value of the property has been diminished" (IAAO 1992). The question still remains, is it functional or economic obsolescence? From an application point of view, perhaps trying to define the additional value loss is immaterial. From a conceptual or theoretical point of view, inquiring minds want to know.

When posing this question to other appraisers, the resounding response was "economic obsolescence." However, when asked how the mercury spill fit into the definition of economic obsolescence, the responses were not very strong in support. By definition, economic obsolescence is "a cause of depreciation that is a loss of value as a result of impairment in utility and desirability caused by factors outside the property's boundaries" (IAAO 1997). Economic obsolescence is also referred to as external or locational obsolescence.

There is no doubt the mercury spill was an impairment before it was remediated. But is it still? The spill was damage inside the house under the previous property owner's control unless an argument is made that a tenant caused the spill, thus placing it outside the owner's control. However, what if it had been the owner who caused the spill?

One lonely appraiser automatically noted that the value loss was functional obsolescence because of the loss of ability to use the property as it was designed. Functional obsolescence is defined as the "loss in value of a property resulting from changes in tastes, preferences, technical innovations, or market standards" (IAAO 1997). The loss of functionality occurred only while the residence was vacant. Although it could not be used as a residence at the time, all indications were that

remediation would allow for a continued residential use.

Conclusion

The conclusions drawn here are based on only one sale. In small jurisdictions, this may be the only sale of this type of property that ever occurs. Although one sale does not make a market, failing to recognize the sale as an indication of market value would be difficult to defend on appeal.

Various reading materials did not define clearly whether this was economic or functional obsolescence. It is my belief that economic obsolescence is the most logical choice. Stigma may or may not apply to this property, but some factor created a very large loss in value, and stigma would appear to be the most reasonable explanation. Stigma in the minds of potential purchasers would be outside the control of the property owner and would be recognized as economic obsolescence. The clearest test of obsolescence would be for the property to sell again in a few years to see if the excess loss in value remains.

Whichever form of obsolescence is assigned to this case, the market has stated that a large loss has occurred. In a situation such as this, the principle of substitution should always be remembered.

References

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Oskaloosa Independent. Mercury vapors spread from rural Oskaloosa home. 1997.

This piece introduces a new feature in the *Assessment Journal*, "Case Study." Members and other readers are encouraged to submit their own case studies for consideration, as well as comment on any study appearing here.